

CONT  
A<sup>1</sup>

104, an H.323 gateway 106, an H.323 gatekeeper 108, a LAN server 112 and a plurality of other devices such as personal computers (not shown). The H.323 terminals 102A, 102B are in compliance with the H.323 standard. Thus, the H.323 terminals 102A, 102B support H.245 for negotiation of channel usage, Q.931 for call signaling and call setup, registration admission status (RAS), and RTP/RTCP for sequencing audio and video packets. The H.323 terminals 102A, 102B may further implement audio and video codecs, T.120 data conferencing protocols and MCU capabilities. Further details concerning the Recommendation H.323 may be obtained from the International Telecommunications Union (ITU); the Recommendation is hereby incorporated by reference in its entirety as if fully set forth herein. In addition, the gatekeeper 108 has coupled thereto a bandwidth allocation server (BWAS) 109 according to a specific embodiment of the invention. As will be discussed in greater detail below, the BWAS 109 monitors system bandwidth usage and directs each H.323 terminal to adopt a particular codec or coding algorithm according to bandwidth availability. It is noted that in other specific embodiments the BWAS functionality may also be incorporated into the gatekeeper 108, placed on any terminal or server, or embodied as a separate unit separately coupled to the network 101, as long as the BWAS can communicate with the endpoints. Thus, the figures are merely exemplary.--

---

Paragraph starting at line 27 of page 4:

---

A<sup>2</sup>

--The network terminal 10 is coupled to a video input/output (I/O) interface 28, an audio I/O interface 12, a user application interface 19, and a system control user interface (SCUI) 20. Network terminal 10 also includes an H.225 layer 24, a video coder/decoder (codec) 15, an audio codec 14, H.245 protocol functionality 18, Q.931 protocol functionality 16, and RAS protocol functionality 17. --

---

Paragraph starting at line 34 of page 4:

---

A<sup>3</sup>

--As seen in FIG. 2, the video I/O interface 28 which may be part of the standard

Cont  
A3  
H.323 device connects to the video codec 15 such as an H.261 codec for encoding and decoding video signals. Coupled between video I/O interface 28 and H.225 layer 24, video codec 15 translates encoded video signals to H.225 protocol signals. Although the H.261 codec can be the video codec used for an H.323 terminal, other video codecs, such as H.263 codecs and others, may also be used for encoding and decoding video. The H.245 protocol is used to exchange terminal capability information such as the video coding algorithm. Generally, the called terminal specifies its capabilities to the calling terminal.--

---

Paragraph starting at line 24 of page 5:

---

A4  
--The control layer 11 interfaced with SCUI 20 provides signaling and flow control for proper operation of the H.323 terminal. In particular, all non-audio and non-video control signaling is handled via SCUI 20. Coupled to SCUI 20 in the control layer 11 are H.245 layer 18, Q.931 layer 16 and RAS layer 17, which couple to H.225 layer 24. Thus, SCUI 20 interfaces to the H.245 standard which is the media control protocol that allows capability exchange, channel negotiation, switching of media modes and other miscellaneous commands and indications for multimedia communications. SCUI 20 also interfaces to the Q.931 protocol which defines the setup, teardown, and control of H.323 communication sessions. SCUI 20 further interfaces to the Registration, Admission, Status (RAS) protocol that defines how H.323 entities can access H.323 gatekeepers to perform among other things address translation, thereby allowing H.323 endpoints to locate other H.323 endpoints via an H.323 gatekeeper. The H.225 standard layer 24, which is derived from the Q.931 standard, is the protocol for establishing connection between two or more H.323 terminals and also formats the transmitted video, audio, data and control streams into messages for output to the network interface 13 (e.g., transport over IP network 101). The H.225 layer 24 also retrieves the received video, audio, data and control streams from messages that have been input from network interface 13.--

---

Paragraph starting at line 27 of page 11:

---

A<sup>5</sup>  
--Once the H.323 terminals have re-set their default choices for coding algorithms, the bandwidth monitor 306 continues to monitor bandwidth usage, in a step 512. The bandwidth monitor 306 provides a signal indicative of bandwidth usage to the processor 302. The processor 302, in turn, accesses the memory 308 for the threshold value Y. The processor then performs a compare operation, comparing the threshold value Y with the bandwidth signal received from the bandwidth monitor 306, in a step 514. If the bandwidth usage level is above or equal to Y, then the system continues to monitor usage (return to step 512). If, however, bandwidth usage levels drop below the threshold value Y, then the processor 302 issues a command onto the network allowing the H.323 terminals to re-adjust their coding algorithm hierarchies at step 516. Again, this may take the form of an RAS message or H.245 signaling, with the re-adjustment being either stepping up to the next fastest coding algorithm or alternatively stepping up directly to a selected algorithm, e.g., the fastest coding algorithm. Each H.323 terminal's coding resource unit 111 then adjusts accordingly the coding hierarchy so that the higher-speed, more bandwidth-intense coding algorithms are allowed to be employed.--

---

Paragraph starting at line 30 of page 13:

---

A<sup>6</sup>  
--Returning to FIG. 7, in a step 704, the BWAS 109 and, particularly, the bandwidth monitor 306 monitors the condition of the network and, particularly, bandwidth usage. If the criteria for re-negotiation of codecs are not met, as determined in a step 706, then the process returns to step 704, i.e., monitoring continues. However, if one or more of the criteria are met, then in a step 708, the BWAS 109 sends one or more control signals to the endpoints directing them to renegotiate their codecs. As discussed above, this may be a command to negotiate lower speed codecs or higher speed codecs. In a step 710, the endpoints renegotiate their codecs, using